

Remarks

The preceding amendment and following remarks are submitted in response to the Final Office Action of the Examiner mailed February 19, 2003, setting a three-month shortened statutory period for response ending May 19, 2003, and the Advisory Action mailed July 28, 2003. A petition for a three-month extension of time is enclosed, extending the deadline for response until August 19, 2003. This Amendment assumes that the Amendment-After-Final filed on May 16, 2003 has NOT been entered.

Claims 1, 3-8, 15-18, 20-23, 26-27, 29-35 and 45 remain pending, and claims 2, 9, 10-14, 19, 24-25, 28 and 36-44 have been canceled without prejudice. Entry of this amendment, reconsideration, and allowance of all pending claims are respectfully requested.

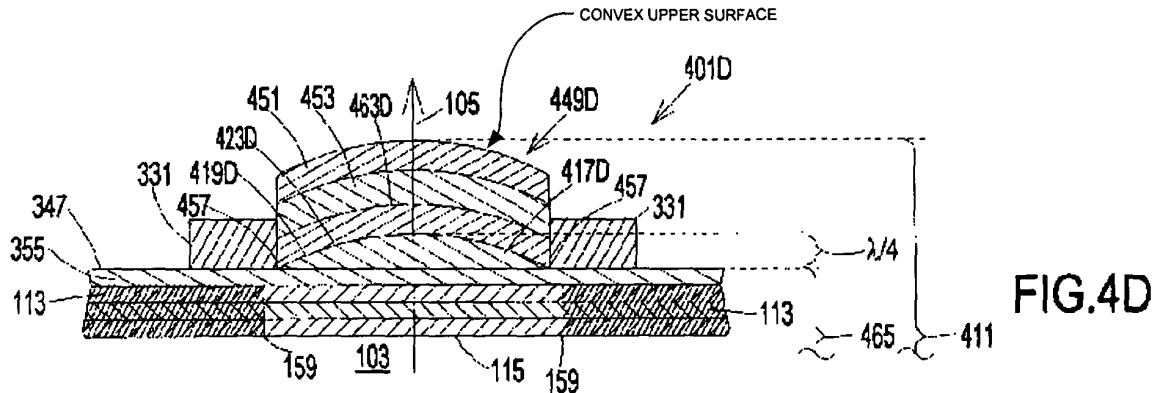
As a preliminary matter, and in paragraph 20 of the Final Office Action, the Examiner acknowledged receipt of the references that were not provided with the prior 1449. However, the Examiner states that no new FORM-1449 was provided, and thus a signed copy cannot be provided to Applicants. Please find enclosed a new FORM-1449 for the Examiner's initials and signature. Applicants respectfully request that the Examiner provide an initialed and signed copy of the enclosed FORM-1449 to Applicants in due course.

The undersigned would like to thank the Examiner for the courtesies extended during the telephonic interviews of August 11-12, 2003. During those interviews, the undersigned faxed a copy of claims 1, 3-8, 15-18, 20-23, 26-27, and 29-35, as amended above, with one exception as detailed below. After reviewing the claims, the Examiner indicated that claims 1, 3-8, 15-18, 20-23, 26-27, 29-33 would be allowable. The one exception is that claims 1 and 6 have been further amended to recite "selected patterned regions being at least partially filled with a second material having a second refractive index." Applicants do not believe that this additional clarifying amendment effect the allowability of any of claims 1, 3-8, 15-18, 20-23, 26-27, 29-33.

During the interviews of August 11-12, 2003, claims 34-35 were not discussed. However, Applicants believe that claims 34-35 are clearly in condition for allowance. In paragraph 8 of the Office Action, the Examiner rejected claims 34-35 under 35 U.S.C. § 102(b) as being anticipated by Corzine et al. With respect to claim 34, the Examiner states that Corzine et al. shows a resonant reflector (citing Figure 4D and column 13, line 52 et seq.) 419D, 451 and 453 across an optical cavity where the index is different for the layers, and the layers coextend along an interface and the interfaces are not parallel to the optical axis. To further clarify the invention, claim 34 has been amended to recite:

34. (Previously Amended) A resonant reflector for an optoelectronic device that has an optical cavity with an optical axis, the resonant reflector comprising:
a resonant reflector layer ~~having~~ defined by two substantially planar opposing surfaces extending across at least part of the optical cavity of the optoelectronic device, the resonant reflector layer having a first region with a first refractive index and a second region with a second refractive index, the first region and the second region co-extending along an interface, at least part of the interface being not parallel to the optical axis.

As can be seen, claim 34 has been amended to recite that the resonant reflector layer is defined by two substantially planar opposing surfaces that extend across at least part of the optical cavity (Emphasis Added). Nothing in Corzine et al. suggests this structure. Instead, it appears that Corzine et al. suggest providing a non-planar upper surface (i.e. concave or convex), as shown in, for example, Figures 1A, 1B, 2, 3A-3B, 4A-4D, 7A-7J. To illustrate this further, Figure 4D of Corzine et al. is reproduced below, with the upper convex surface identified.



In view of the foregoing, Applicants believe that claim 34 is clearly patentable over Corzine et al. For similar and other reasons, Applicants believe that dependent claim 35 is also clearly patentable over Corzine et al.

Applicants have added newly presented claims 45. Newly presented claim 45 recites:

45. (Newly Presented) A resonant reflector for an optoelectronic device tuned to a wavelength, the resonant reflector comprising:

a first material layer having a thickness of an odd multiple of a quarter of the wavelength and also having a first refractive index, the first material layer having one or more patterned regions that extend down into the first material layer thus reducing the thickness of the first material layer in the one or more patterned regions, selected patterned regions being filled with a second material having a second refractive index, the first refractive index being less than the second refractive index; and

a third layer positioned immediately adjacent the first material layer, the third layer having a third refractive index that is greater than the first refractive index.

Newly presented claim 45 is similar to claim 1 above but does not recite “the second material having a thickness of an odd multiple of a quarter the wavelength”. During the interviews of August 11-12, 2003, the Examiner acknowledged that Figures 15-16 of Johnson do not suggest a first material layer that has a thickness of an odd multiple of a quarter of the wavelength, wherein

the first material layer has one or more patterned regions that extend down into the first material layer thus reducing the thickness of the first material layer in the one or more patterned regions.

Figure 16 of Johnson is reproduced below, with an arrow labeled “D” showing the thickness of layer 50 and, according to the Examiner, layer 60 (not labeled in Figure 16, but shown in Figure 15). In the Final Office Action, the Examiner states that “layer 60 is part of layer 50” and is immediately adjacent.

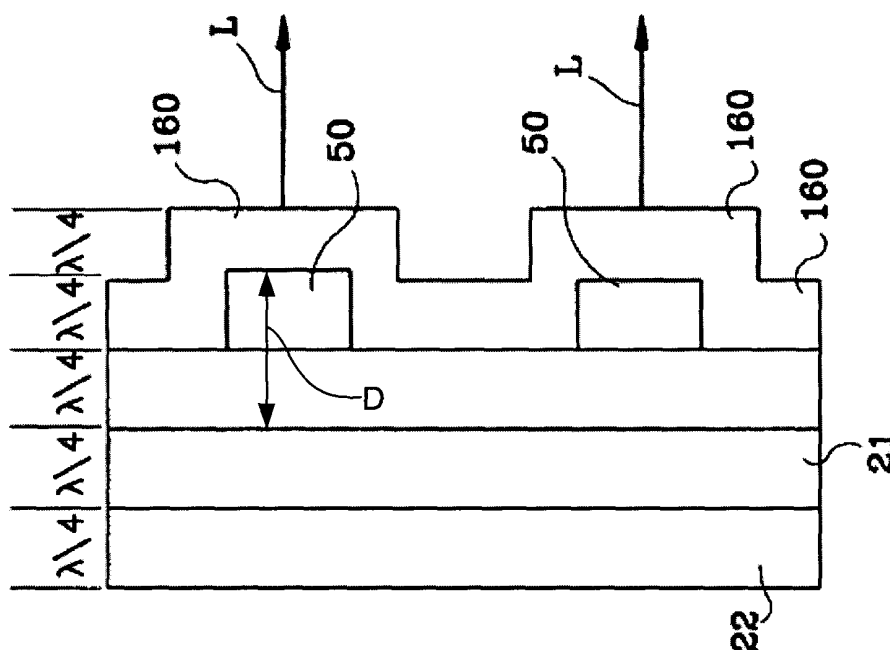


Fig. 16

Assuming layer 60 is part of layer 50, as the Examiner suggests, and both layers 50/60 correspond to the first material layer of newly presented claim 45, the thickness “D” of layers 50/60 is an even multiple of a quarter of the wavelength, and not an odd multiple as recited in newly presented claim 45. As such, this interpretation of Johnson cannot render claim 45 unpatentable. Even assuming only layer 50 corresponds to the first material layer of claim 45, then Figure 16 of Johnson would not appear to show a third layer positioned immediately adjacent the first material layer, wherein the third layer has a third refractive index that is greater

than the first refractive index, as recited in claim 45, particularly since according to the Examiner, layers 50 and 60 are made from the same material. In view of the foregoing, Applicant believes that newly presented claim 45 is clearly patentable over Johnson.

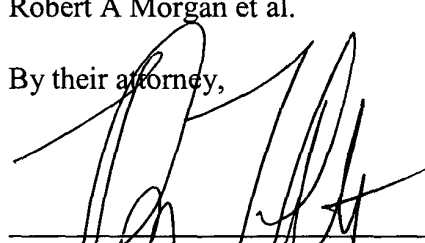
During the interviews of August 11-12, 2003, the Examiner expressed a concern that a claim like claim 45 would be broader than the optimum solution. However, there is no requirement that Applicants claim only an optimum solution.

In view of the foregoing, it is respectfully submitted that all pending claims 1, 3-8, 15-18, 20-23, 26-27, 29-35 and 45 are now in condition for allowance. Issuance of a Notice of Allowance in due course is respectfully requested. If a telephone conference might be of assistance, please contact the undersigned attorney at (612) 677-9050.

Respectfully submitted,

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By their attorney,



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